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## **I. STATUS OF CLAIMS**

Claims 1-30 are pending. Claims 1-13, 15-17, and 19-30 stand rejected under 35 U.S.C. § 103(a). *See Examiner's Office Action* pp. 2-8 (01 June 2006).

## **II. PRESENTED CLAIMS ALLOWABLE IN VIEW OF THE MPEP STANDARDS AND THE ART OF RECORD**

Following, Applicant first sets forth the MPEP standards and/or law for determining obviousness. Thereafter, Applicant shows that, under the MPEP standards, the presented claims are patentable over the art of record.

## **III. MPEP STANDARDS FOR DETERMINING OBVIOUSNESS<sup>1</sup>**

Described following are the MPEP standards for determining obviousness. In some rare instances, Applicant has supplemented the MPEP standards by citing Federal Circuit case law. Should Examiner feel that Applicant has in any way mischaracterized the MPEP or the cited law, Applicant requests a courtesy call at the telephone number set forth below.

### **A. MPEP STANDARDS FOR DETERMINING OBVIOUSNESS**

As a preliminary matter, with respect to patentability in general, the MPEP states as follows: "the examiner bears the initial burden, on review of the prior art or on any other ground, of presenting a prima facie case of unpatentability. If that burden is met, the burden of coming forward with evidence or argument shifts to the applicant. . . . If examination at the

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<sup>1</sup> Applicant is aware that Examiner is familiar with the MPEP standards. Applicant is merely setting forth the MPEP standards to serve as a framework for Applicant's arguments following. Should Examiner disagree with Applicant's characterization of the MPEP standards, applicant respectfully requests correction.

initial stage does not produce a prima facie case of unpatentability, then without more the applicant is entitled to grant of the patent.” *MPEP* § 2107 (citing *In re Oetiker*, 977 F.2d 1443, 1445, 24 USPQ2d 1443, 1444 (Fed. Cir. 1992)); *In Re Glaug* \*5 (Fed. Cir., 15 March 2002) (Fed. Cir. BBS) (“During patent examination the PTO bears the initial burden of presenting a prima facie case of unpatentability. *In re Oetiker*, 977 F.2d 1443, 1445, 24 USPQ2d 1443, 1444 (Fed. Cir. 1992); *In re Piasecki*, 745 F.2d 1468, 1472, 223 USPQ 785, 788 (Fed. Cir. 1984). If the PTO fails to meet this burden, then the applicant is entitled to the patent.”) . Accordingly, unless and until an examiner presents evidence establishing prima facie unpatentability, an applicant is entitled to a patent on all claims presented for examination.

More specifically, with respect to obviousness as a particular type of unpatentability, the MPEP states that “[t]he examiner bears the initial burden of factually supporting any prima facie conclusion of obviousness<sup>2</sup>.” *MPEP* § 2142. The MPEP indicates that in order for an examiner to establish a prima facie case that an invention, as defined by a claim at issue, is obvious the examiner must (1) interpret the claim at issue; (2) define one or more prior art reference components relevant to the claim at issue; (3) ascertain the differences between the one or more prior art reference components and the elements of the claim at issue; and (4) adduce objective evidence which establishes, under a preponderance of the evidence standard, a teaching to modify the teachings of the prior art reference components such that the prior art reference components can be used to construct a device that meets the recitations of the claim at issue. This last step generally encompasses two sub-steps: (1) adducement of objective evidence teaching how to modify the prior art components to achieve the individual recitations of the claim at issue; and (2) adducement of objective evidence teaching how to combine the modified individual components such that the claim at issue, as a whole, is achieved. *MPEP* § 2141; *MPEP* § 2143. Each of these forgoing is further defined within the MPEP. *Id.*

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<sup>2</sup> An invention, as embodied in the claims, is rendered obvious if an examiner concludes that although the claimed invention is not identically disclosed or described in a reference, the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. *MPEP* § 2141 (citing 35 U.S.C. § 103).

## **1. INTERPRETING A CLAIM AT ISSUE**

With respect to interpreting a claim at issue, the *MPEP* directs that, during examination -- as opposed to subsequent to issue -- such claim be interpreted as broadly as the claim terms would reasonably allow when read by one skilled in the art with which the claimed invention is most closely connected. In practice, this is achieved by giving each of the terms in the claim the “plain meaning” of the terms as such would be understood by those having ordinary skill in the art, and if portions of the claim have no “plain meaning” within the art, or are ambiguous as used in a claim, then the examiner is to consult the specification for clarification. *MPEP* § 2111.

## **2. DEFINITION OF ONE OR MORE PRIOR ART REFERENCE COMPONENTS RELEVANT TO THE CLAIM AT ISSUE**

Once the claim at issue has been properly interpreted, the next step is the definition of one or more prior art reference components (e.g., electrical, mechanical, or other components set forth in a prior art reference) relevant to the properly interpreted claim at issue. With respect to the definition of one or more prior art reference components relevant to the claim at issue, the *MPEP* defines three proper sources of such prior art reference components, with the further requirement that each such source must have been extant at the time of invention to be considered relevant. These three sources are as follows: patents as defined by 35 U.S.C. § 102, printed publications as defined by 35 U.S.C. § 102, and information (e.g., scientific principles) deemed to be “well known in the art”<sup>3</sup> as defined under 35 U.S.C. § 102. *MPEP* § 2141 and § 2144.

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<sup>3</sup> The fact that information deemed to be “well known in the art” can serve as a proper source of prior art reference components seems to open the door to subjectivity, but such is not the case. As a remedy to this potential problem, *MPEP* § 2144.03 states that if an examiner asserts that his position is derived from and/or is supported by a teaching or suggestion that is alleged to have been “well known in the art,” and that if an applicant traverses such an assertion (that something was “well known within the art”), the examiner must cite a reference in support of his or her position. The same *MPEP* section also states that when a rejection is based on facts within the personal knowledge of an examiner, the data should be stated as specifically as possible, and the facts must be supported, when called for by the applicant, by an affidavit from the examiner. Such an affidavit is subject to contradiction or explanation by

### **3. ASCERTAINMENT OF DIFFERENCES BETWEEN PRIOR ART REFERENCE COMPONENTS AND CLAIM AT ISSUE; TEACHING TO MODIFY AND/OR COMBINE PRIOR ART REFERENCE COMPONENTS TO REMEDY THOSE DIFFERENCES IN ORDER TO ACHIEVE LANGUAGE OF CLAIM AT ISSUE**

With one or more prior art components so defined and drawn from the proper prior art sources, the differences between the one or more prior art reference components and the elements of the claim at issue are to be ascertained. Thereafter, in order to establish a case of prima facie obviousness, an examiner must set forth a rationale, supported by objective evidence<sup>4</sup> sufficient to demonstrate under a preponderance of the evidence standard, that in the prior art extant at the time of invention there was a teaching to modify and/or combine the one or more prior art reference components to construct a device that meets the recitations of the claim at issue.

The preferable evidence relied upon is an express teaching to modify/combine within the properly defined objectively verifiable sources of prior art. In the absence of such express teaching, an examiner may attempt to establish a rationale to support a finding of such teaching reasoned from, or based upon, express teachings taken from the defined proper sources of such evidence (i.e., properly defined objectively verifiable sources of prior art). *MPEP* § 2144.04; *In re Dembiczak*, 50 USPQ2d 1614 (Fed. Cir. 1999).

The MPEP recognizes the pitfalls associated with the tendency to subconsciously use impermissible “hindsight” when an examiner attempts to establish such a rationale. The MPEP has set forth at least two rules to ensure against the likelihood of such impermissible use of hindsight. The first rule is that “under 35 U.S.C. 103, the examiner must step backward in time and into the shoes worn by the hypothetical ‘person of ordinary skill in the art’ when the invention was unknown and just before it was made. In view of all factual information<sup>5</sup>, the examiner must then make a determination whether the claimed invention ‘as a whole’ would

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the affidavits of the applicant and other persons. *Id.* Thus, all sources of prior art reference components must be objectively verifiable.

<sup>4</sup> The proper sources of the objective evidence supporting the rationale are the defined proper sources of prior art reference components, discussed above, with the addition of factually similar legal precedent. *MPEP* § 2144.

<sup>5</sup> “Factual information” is information actually existing or occurring, as distinguished from mere supposition or opinion. *Black’s Law Dictionary* 532 (5th ed. 1979).

have been obvious at that time to that person. Knowledge of an Applicant's disclosure must be put aside in reaching this determination, yet kept in mind in order to determine the 'differences,' conduct the search, and evaluate the 'subject matter as a whole' of the invention. The tendency to resort to 'hindsight' based upon an Applicant's disclosure is often difficult to avoid due to the very nature of the examination process. However, impermissible hindsight must be avoided and the legal conclusion must be reached on the basis of the facts gleaned from the prior art."

*MPEP* § 2142 (emphasis added). Thus, if the only objective evidence of such teaching to modify and/or combine prior art reference components is an applicant's disclosure, no evidence of such teaching exists<sup>6</sup>.

The second rule is that if an examiner attempts to rely on some advantage or expected beneficial result that would have been produced by a modification and/or combination of the prior art reference components as evidence to support a rationale to establish such teachings to modify and/or combine prior art reference components, the *MPEP* requires that such advantage or expected beneficial result be objectively verifiable teachings present in the acceptable sources of prior art (or drawn from a convincing line of reasoning based on objectively verifiable established scientific principles or teachings). *MPEP* § 2144. Thus, as a guide to avoid the use of impermissible hindsight, these rules from the *MPEP* make clear that absent some objective evidence, sufficient to persuade under a preponderance of the evidence standard, no teaching of such modification and/or combination exists.<sup>7</sup>

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<sup>6</sup> An applicant may argue that an examiner's conclusion of obviousness is based on improper hindsight reasoning. However, "[a]ny judgment on obviousness is in a sense necessarily a reconstruction based on hindsight reasoning, but so long as it takes into account only knowledge which was within the level of ordinary skill in the art at the time the claimed invention was made and does not include knowledge gleaned only from applicant's disclosure, such a reconstruction is proper." *MPEP* § 2145(X)(A) (emphasis added).

<sup>7</sup> *In Re Sang Su Lee* \*7-8 (Fed.Cir. 18 January 2002) (Fed.Cir. BBS) ("When patentability turns on the question of obviousness, the search for and analysis of the prior art includes evidence relevant to the finding of whether there is a teaching, motivation, or suggestion to select and combine the references relied on as evidence of obviousness. See, e.g., *McGinley v. Franklin Sports, Inc.*, 262 F.3d 1339, 1351-52, 60 USPQ2d 1001, 1008 (Fed. Cir. 2001) ("the central question is whether there is reason to combine [the] references," a question of fact drawing on the *Graham* factors). "*The factual inquiry whether to combine references must be thorough and searching.*" *Id.* *It must be based on objective evidence of record. This precedent has been reinforced in myriad decisions, and cannot be dispensed with.* See, e.g., *Brown & Williamson Tobacco Corp. v. Philip Morris Inc.*, 229 F.3d 1120, 1124-25, 56 USPQ2d 1456, 1459 (Fed. Cir. 2000) ("a showing of a suggestion, teaching, or motivation to combine the prior art references is an 'essential component of an obviousness holding'") (quoting *C.R. Bard, Inc., v. M3 Systems, Inc.*, 157 F.3d 1340, 1352, 48 USPQ2d 1225, 1232 (Fed. Cir. 1998)); *In re Dembiczak*, 175 F.3d 994, 999, 50 USPQ2d 1614, 1617 (Fed. Cir. 1999) ("Our case law makes clear that the best defense against the subtle but powerful attraction of a hindsight-based obviousness analysis is rigorous application of the requirement for a showing of the teaching or motivation to combine prior art references."); *In re Dance*, 160 F.3d 1339, 1343, 48

#### **IV. ART OF RECORD DOES NOT ESTABLISH PRIMA FACIE CASE OF UNPATENTABILITY OF CLAIMS 1-19 AS PRESENTED HEREIN**

In the Office Action, Examiner stated “claims 1-4, 7, 17, and 19-30 stand rejected under 35 U.S.C. 103(a) as being unpatentable over Nishimura et al. (US Patent App. No. 2004/0005889) in view of Stine (US Patent App. No. 2003/0033394).” *See Examiner’s Office Action* page 2 (01 June 2006). Claims 5, 6, 8 -13, and 15-16 also stand rejected under 35 U.S.C. § 103(a). *Id.* pp. 5-8 (01 June 2006).

Applicant respectfully shows, below, that, on its face, the art of record does not show or suggest Applicant’s herein-presented Claims 1-19. Accordingly, under the MPEP standards as set forth above, Applicant respectfully requests that Examiner allow such claims.

##### **A. INDEPENDENT CLAIM 1**

Applicant respectfully points out that Applicant’s herein-presented Independent Claim 1 recites as follows:

A mote system comprising:

[a] at least one of an antenna signal generation unit or an antenna signal detection unit;

[b] a directional antenna system operably coupled with said at least one of an antenna signal generation unit or an antenna signal detection unit, wherein said

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USPQ2d 1635, 1637 (Fed. Cir. 1998) (there must be some motivation, suggestion, or teaching of the desirability of making the specific combination that was made by the applicant); *In re Fine*, 837 F.2d 1071, 1075, 5 USPQ2d 1596, 1600 (Fed. Cir. 1988) (“teachings of references can be combined only if there is some suggestion or incentive to do so.”) (emphasis in original) (quoting *ACS Hosp. Sys., Inc. v. Montefiore Hosp.*, 732 F.2d 1572, 1577, 221 USPQ 929, 933 (Fed. Cir. 1984)). The need for specificity pervades this authority. *See, e.g., In re Kotzab*, 217 F.3d 1365, 1371, 55 USPQ2d 1313, 1317 (Fed. Cir. 2000) (“particular findings must be made as to the reason the skilled artisan, with no knowledge of the claimed invention, would have selected these components for combination in the manner claimed”); *In re Rouffet*, 149 F.3d 1350, 1359, 47 USPQ2d 1453, 1459 (Fed. Cir. 1998) (“even when the level of skill in the art is high, the Board must identify specifically the principle, known to one of ordinary skill, that suggests the claimed combination. In other words, the Board must explain the reasons one of ordinary skill in the art would have been motivated to select the references and to combine them to render the claimed invention obvious.”))

directional antenna system further includes but is not limited to an antenna steering unit; and

[c] a mote having said directional antenna system operably coupled with said at least one of an antenna signal generation unit or an antenna signal detection unit.

### **1. NO PRIMA FACIE OBVIOUSNESS OF INDEPENDENT CLAIM 1**

In the Office Action, Examiner rejected Applicant's Claim 1 "as being unpatentable over Nishimura et al. (US Patent App. No. 2004/0005889) in view of Stine (US Patent App. No. 2003/0033394)." *See Examiner's Office Action* p. 2 (01 June 2006). As shown above, in order to establish a prima facie case of obviousness an examiner must adduce objective evidence which establishes, under a preponderance of the evidence standard, a teaching to modify the teachings of the cited art reference components such that the cited art reference components can be used to construct a device that meets the recitations of the claim at issue. This last step generally encompasses two sub-steps: (1) adducement of objective evidence teaching how to modify the cited art components to achieve the individual recitations of the claim at issue; and (2) adducement of objective evidence teaching how to combine the modified individual components such that the claim at issue, as a whole, is achieved.

As shown following, no objective evidence teaching how to modify/combine the cited art components to achieve the individual recitations of herein-presented Claim 1 has been identified by Examiner. Accordingly, under the MPEP standards no prima facie case of the obviousness of Claim 1 has been established. Specifically, shown following is that (1) under the MPEP standards there can be no teaching to modify/combine the technologies of Nishimura with the technologies of Stine as suggested by Examiner in that such combination will render the technologies of Nishimura unfit for their intended purposes; (2) under the MPEP standards there can be no teaching to modify/combine the technologies of Nishimura with the technologies of Stine as suggested by Examiner in that the proposed modification/combination changes the principle of operation of the technologies of Nishimura; and/or (3) under the MPEP standards there can be no teaching to modify/combine in that Applicant is traversing Examiner's assertion of a teaching to modify/combine as not objectively verifiable in that it appears to be based on

inadvertent impermissible hindsight (Applicant is thus asking for citation to an objectively verifiable teaching to modify/combine or an affidavit from Examiner). Accordingly, under the MPEP standards there is no prima facie case of the obviousness of Applicant's Independent Claim 1.

**(A) NO OBJECTIVE EVIDENCE OF TEACHING TO MODIFY/COMBINE EXISTS IN THAT PROPOSED MODIFICATION CHANGES THE TECHNOLOGIES OF NISHIMURA ET AL. SUCH THAT THEY ARE UNSATISFACTORY FOR THEIR INTENDED PURPOSES: NO TEACHING TO MODIFY/COMBINE AS A MATTER OF LAW**

With respect to this point, Applicant respectfully directs Examiner to *MPEP* § 2143.01, Suggestion or Motivation to Modify the References, which states as follows (emphasis added):

**THE PROPOSED MODIFICATION CANNOT RENDER THE PRIOR ART UNSATISFACTORY FOR ITS INTENDED PURPOSE**

If proposed modification would render the prior art invention being modified unsatisfactory for its intended purpose, then there is no suggestion or motivation to make the proposed modification. *In re Gordon*, 733 F.2d 900, 221 USPQ 1125 (Fed. Cir. 1984) (Claimed device was a blood filter assembly for use during medical procedures wherein both the inlet and outlet for the blood were located at the bottom end of the filter assembly, and wherein a gas vent was present at the top of the filter assembly. The prior art reference taught a liquid strainer for removing dirt and water from gasoline and other light oils wherein the inlet and outlet were at the top of the device, and wherein a pet-cock (stopcock) was located at the bottom of the device for periodically removing the collected dirt and water. The reference further taught that the separation is assisted by gravity. The Board concluded the claims were *prima facie* obvious, reasoning that it would have been obvious to turn the reference device upside down. The court reversed, finding that if the prior art device was turned upside down it would be inoperable for its intended purpose because the gasoline to be filtered would be trapped at the top, the water and heavier oils sought to be separated would flow out of the outlet instead of the purified gasoline, and the screen would become clogged.).

With respect to the obviousness of Independent Claim 1, Examiner has stated as follows:

Regarding Claim 1, Nishimura et al. wireless communication apparatus teaches at least one of an antenna generation unit 2 (Fig. 3, section 0080) or an signal detection unit 2 (Fig. 3); a antenna system 6 (Fig. 3) operably coupled with the at least one of an antenna signal generation unit 2 (Fig. 3) or an antenna signal detection unit 2 (Fig. 3), a mote 3 (Fig. 3) having the antenna system 6 (Fig. 3) operably coupled with the at least one of an antenna signal generation unit 2 (Fig. 3) or an antenna signal detection unit 2 (Fig. 3). Nishimura et al. fails to teach a directional antenna and antenna steering.<sup>8</sup>

Stine's access and routing protocol for ad hoc network teaches wherein the directional antenna system (Sections 0205-0207) further includes but is not limited to an antenna steering unit (Sections 0309-0310). Note, Stine's invention is an ad hoc network (section 0003) which is equivalent to a mote network because both deal with computing, sensing devices, and communication.<sup>9</sup>

Therefore, it would have been obvious at the time of the invention to one of ordinary skill in the art at the time the invention was made to incorporate a directional antenna and antenna steering as taught by Stine into Nishimura et al. mote apparatus in order to improve the success of packet exchanges (Section 0309).

*See Examiner's Office Action* p. 3 (01 June 2006).

- (1) **NO EVIDENCE TEACHING HOW TO STEER THE DIRECTIONAL ANTENNAS OF THE SUGGESTED MODIFICATION/COMBINATION SUCH THAT INTENDED COMMUNICATIONS WILL TAKE PLACE, AND THUS THE SUGGESTED MODIFICATION/COMBINATION WOULD RENDER THE TECHNOLOGIES OF NISHIMURA UNSATISFACTORY FOR THEIR INTENDED PURPOSES: NO TEACHING TO MODIFY/COMBINE AS A MATTER OF LAW**

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<sup>8</sup> Applicant respectfully points out that the steering of Stine is heavily dependent and/or intertwined with the disclosed protocols of Stine. If Examiner subsequently tries to assert that the disclosed protocols should be incorporated into the instances of mote 3 of Nishimura, Applicant hereby requests objective evidence teaching that such should be, or even could be, done in the motes of Nishimura.

<sup>9</sup> For sake of clarity, Applicant is not belaboring the point, but Applicant does not agree with this factual statement by Examiner, and thus requests objective evidence demonstrating that this statement is true. Yet more specifically, Applicant further points out that Applicant is not asking for proof of the statement in general, but rather that the ad hoc network of Stine is equivalent to a mote network.

As referenced above, Examiner has stated “Nishimura et al. fails to teach a directional antenna and antenna steering.” See *Examiner’s Office Action* p. 2 (01 June 2006). Rather, Nishimura teaches a “coil antenna” (see, e.g., Figure 2 of Nishimura and/or text regarding same), a “monopole antenna” (see, e.g., Figure 2 of Nishimura and/or text regarding same), a “dipole antenna” (see, e.g., Figure 14 of Nishimura and/or text regarding same), and/or “modifications of a dipole antenna” (see, e.g., the text appearing at section [0117] of Nishimura). One reason for Nishimura’s disclosure of the foregoing-referenced types of antennas may be gleaned from the following quotations from Nishimura (which are indicative of some of Nishimura’s principles of operations; emphasis added):

[0070] FIG. 1 is a conceptual diagram showing a wireless communication system according the invention. A number of fine micro functional elements (Motes) 3 each having a communication function **are distributed here and there like stars in the cosmic Galaxy.** Each Mote 3 has a wireless communication function using light or RF waves and communicates with a base station 4.

[0071] In the example shown in FIG. 1, the **base station 4 communicates with Mote 3** near to the base station. **This Mote 3 communicates with another Mote 3 near to the Mote 3.** In this manner, **communications are possible between each Mote 3 and base station 4.**

...

[0184] FIG. 40 shows a sensing network system consisting of functional elements 101 to 105 and a base station 100. Each functional element has a wireless communication function (first function) and a function (second function) of sensing the state of an environment, such as temperature, humidity, magnetic field, electric field, acceleration speed, position, direction and density of specific chemical seed.

[0185] The functional element 101 communicates with the base station 100. The functional element 101 receives sensing timing information from the base system 100 and transmits the sensed information to the base system 100. **Each of the functional elements 102, 103 and 104 communicates with the base station 100 via another or other functional elements.** In the example shown in FIG. 40, in **addition to the communication with the base station 100, communications between functional elements are also performed such as between the functional elements 102 and 105 and between the functional elements 101 and 105.** In this manner, in accordance with the location and environment of each functional element, optimum information can be sent to the base station 100 most efficiently.

[0186] Although the base station 100 is shown in FIG. 40, **a particular functional element may function as the base station.** This particular base

**station 100 functions as a relay base station for transferring the information sensed at each functional element to another functional element.**

...

[0200] FIG. 46 shows a **multi-hop type network in which data is transferred via a plurality of functional elements**. Even if a distance between adjacent functional elements is short, a long distance transmission is possible **by connecting respective functional elements sequentially**. A plurality of functional elements can be autonomically configure a network because each functional element is provided with an ad hoc connection function.<sup>10</sup>

...

[0241] **According to the present invention, the fine functional element received control information from the base station communicates with another fine functional element by using the communication function to thereby provide one or more functions other the communication function and make the discrete fine functional elements make a cooperative work.** It is therefore possible to provide a wireless communication apparatus and method for collectively managing a sensing operation at a plurality of different positions by using wearable apparatus or a sensing network.

Applicant respectfully points out that were one to “incorporate a directional antenna and antenna steering as taught by Stine into Nishimura et al. mote apparatus in order to improve the success of packet exchanges” as suggested by Examiner, the motes of Nishimura would be rendered unsatisfactory for intended purposes such as those illustrated in the bolded/underlined portions of Nishimura set forth immediately foregoing. For example, if the antennas of various instances of mote 3 of Nishimura were to be replaced by the “directional antenna and antenna steering as taught by Stine” it is unlikely that Nishimura’s intended communications -- such as those bolded/underlined in block quotes above -- would occur at all since there is as of yet no teaching of how the motes might determine where to steer the directional antennas of the modified instances of mote 3 of Nishimura.<sup>11</sup> Thus, the Examiner-suggested modifications/combinations would render the technologies of Nishimura unsatisfactory for their intended purposes for at least the reasons set forth herein.

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<sup>10</sup> Applicant respectfully submits that the fact that “each functional element is provided with an ad hoc connection function” is not a statement that ad hoc networks and mote networks are the same.

<sup>11</sup> Applicant points out that the steering of Stine is heavily dependent and/or intertwined with the disclosed protocols of Stine. If Examiner subsequently tries to assert that the disclosed protocols should be incorporated into the instances of mote 3 of Nishimura, Applicant hereby requests objective evidence teaching that such should be, or even could be, done in the mote network of Nishimura.

**(2) EVEN IF THERE WERE A TEACHING OF HOW TO DIRECT THE DIRECTIONAL ANTENNAS OF THE SUGGESTED MODIFICATION/COMBINATION, THE VERY DIRECTIONALITY OF THE ANTENNAS WOULD RENDER THE TECHNOLOGIES OF NISHIMURA UNSATISFACTORY FOR THEIR INTENDED PURPOSES: NO TEACHING TO MODIFY/COMBINE AS A MATTER OF LAW**

Notwithstanding the foregoing, assuming, *arguendo*, that Examiner had produced an as-yet-unknown objective teaching of how to modify/combine the Examiner-suggested modification/combination of the directional antennas of Stine with the instances of mote 3 of Nishimura such that the directional antennas could be steered sufficient to allow two stations to communicate in an appropriate fashion, the very directionality of the antennas would render the technologies of Nishimura unsatisfactory for their intended purposes (e.g., such as those set forth in block-quote above). For instance, with reference to paragraph [071] of Nishimura set forth above, if a directional antenna of a twice-hypothetically-modified instance of mote 3 of Nishimura were to be directed toward base station 4, the directional antenna of such a twice-hypothetically-modified instance of mote 3 of Nishimura would not communicate with the directional antenna of another like twice-hypothetically-modified instance of mote 3 of Nishimura. Additional instances of such unsatisfactoriness may be seen by applying similar reasoning to substantially all of the bolded portions of paragraphs [185], [186], [200], and [241] of Nishimura as set forth above.<sup>12</sup> Thus, the suggested modifications/combinations would render the technologies of Nishimura unsatisfactory for their intended purposes for at least this reason.

As shown, the modification/combination of Stine with Nishimura would render the motes of Nishimura unfit for their intended purposes. Thus, under the MPEP standards there can be no teaching to modify/combine such references to meet the recitations of Independent Claim 1 as a matter of law. Accordingly, in light of the MPEP standards for patentability as set forth above, Applicant respectfully requests that Examiner hold Applicant's Independent Claim 1

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<sup>12</sup> Applicant does not explicitly set forth such reasoning here as a courtesy to Examiner, but would be glad to do so if Examiner subsequently desires such.

patentable and issue a Notice of Allowance of Independent Claim 1 for at least the reasons set forth herein.

**(B) NO OBJECTIVE EVIDENCE OF TEACHING TO MODIFY/COMBINE EXISTS IN THAT PROPOSED MODIFICATION/COMBINATION CHANGES THE PRINCIPLE OF OPERATION OF NISHIMURA: NO TEACHING TO MODIFY/COMBINE AS A MATTER OF LAW**

With respect to this point, Applicant respectfully directs Examiner to *MPEP* § 2143.01, Suggestion or Motivation to Modify the References, which states as follows (emphasis added):

**THE PROPOSED MODIFICATION CANNOT CHANGE THE PRINCIPLE OF OPERATION OF A REFERENCE**

If the proposed modification or combination of the prior art would change the principle of operation of the prior art invention being modified, then the teachings of the references are not sufficient to render the claims *prima facie* obvious. In *re Ratti*, 270 F.2d 810, 123 USPQ 349 (CCPA 1959) (Claims were directed to an oil seal comprising a bore engaging portion with outwardly biased resilient spring fingers inserted in a resilient sealing member. The primary reference relied upon in a rejection based on a combination of references disclosed an oil seal wherein the bore engaging portion was reinforced by a cylindrical sheet metal casing. Patentee taught the device required rigidity for operation, whereas the claimed invention required resiliency. The court reversed the rejection holding the "suggested combination of references would require a substantial reconstruction and redesign of the elements shown in [the primary reference] as well as a change in the basic principle under which the [primary reference] construction was designed to operate." 270 F.2d at 813, 123 USPQ at 352.).

As referenced above, Examiner has stated "Nishimura et al. fails to teach a directional antenna and antenna steering." *See Examiner's Office Action* p. 2 (01 June 2006). One reason why this is true is that the types of antennas (e.g., a few of which have been set forth above) disclosed in Nishimura are interwoven with the principle of operation of the technologies of Nishimura. Specifically, a few of the principles of operation of Nishimura are as follows:

**[0071] In the example shown in FIG. 1, the base station 4 communicates with Mote 3 near to the base station. This Mote 3 communicates with another**

**Note 3 near to the Note 3. In this manner, communications are possible between each Note 3 and base station 4.**

...

[0185] .... In the example shown in FIG. 40, **in addition to the communication with the base station 100, communications between functional elements are also performed** such as between the functional elements 102 and 105 and between the functional elements 101 and 105. In this manner, in accordance with the location and environment of each functional element, optimum information can be sent to the base station 100 most efficiently.

...

[0186] Although the base station 100 is shown in FIG. 40, **a particular functional element may function as the base station. This particular base station 100 functions as a relay base station for transferring the information sensed at each functional element to another functional element.**

...

[0200] FIG. 46 shows a **multi-hop type network in which data is transferred via a plurality of functional elements.** Even if a distance between adjacent functional elements is short, a long distance transmission is possible **by connecting respective functional elements sequentially.** A plurality of functional elements can be autonomically configure a network because each functional element is provided with an ad hoc connection function.<sup>13</sup>

...

[0241] According to the present invention, **the fine functional element received control information from the base station communicates with another fine functional element by using the communication function to thereby provide one or more functions other the communication function and make the discrete fine functional elements make a cooperative work.**

If one were to “incorporate a directional antenna and antenna steering as taught by Stine into Nishimura et al. mote apparatus” as suggested by Examiner, the technologies of Nishimura would no longer be able to perform at least the foregoing listed operations of Nishimura. As discussed above, one reason why such modified Nishimura technologies would be rendered unsatisfactory is that, at present, there is no teaching of how to orient the hypothetical directional antennas of the Examiner-suggested hypothetically-modified Nishimura technologies to point in the right direction to effect communications. Hence, in addition to the Examiner-suggested

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<sup>13</sup> Applicant respectfully submits that the fact that “each functional element is provided with an ad hoc connection function” is not a statement that ad hoc networks and mote networks are the same.

modification/combination,<sup>14</sup> there would need to be some type of reconstruction and/or redesign – appropriate to the capabilities of motes – to provide for proper orientation of the antennas.<sup>15</sup>

As has also been shown above, even if an objective teaching had been identified<sup>16</sup> regarding how to properly orient the proposed modification of Nishimura by the “directional antenna and antenna steering of Stine” such twice-hypothetically-modified Nishimura-Stine technologies would be unsatisfactory to perform substantially any of the bolded portions of paragraphs [71], [185], [186], [200], and/or [241] of Nishimura as set forth herein. Hence, even if Examiner had identified some teaching of the reconstruction and/or redesign – appropriate to the capabilities of motes – to provide for proper orientation of the antennas, Examiner would still need to further identify references teaching additional reconstruction of the twice-hypothetically-modified motes sufficient to allow them to perform at least the functions of the bolded portions of paragraphs [71], [185], [186], [200], and/or [241] of Nishimura as set forth herein.<sup>17</sup>

As has been shown above, the technologies of Nishimura modified/combined with the technologies of Stine as suggested by Examiner would require “substantial reconstruction and redesign of the elements shown in [... Nishimura] as well as a change in the basic principle under which the [... Nishimura] construction was designed to operate” in order to render the Examiner-suggested combination capable of performing even a subset of the intended purposes of the technologies of Nishimura. As has also been shown, even if the Examiner-suggested combination were to be somehow hypothetically modified such that the Examiner suggested modification/combination became somewhat workable, such a hypothetically modified version of the Examiner-suggested combination would itself require “substantial reconstruction and redesign of the [hypothetically modified] elements shown in [... Nishimura] as well as a change in the basic principle under which the [hypothetically modified] [... Nishimura] construction was designed to operate” in order to perform the intended communications. Accordingly, insofar as that the Examiner-suggested modification itself would likely require two additional and as-yet-hypothetical modifications as explained above, under the MPEP standards set forth in block quote above,

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<sup>14</sup> The first hypothetical modification.

<sup>15</sup> The second hypothetical modification.

<sup>16</sup> Applicant points out that no such teaching has yet been identified by Examiner.

<sup>17</sup> Thereby creating a third hypothetical modification of the instances of the motes 3 of Nishimura.

Examiner's suggested modification/combination "would change the principle of operation" of Nishimura's technologies.

Insofar as that the Examiner-suggested modification/combination would itself require *substantial* hypothetical reconstruction and/or redesign to render the Examiner-suggested modification/combination capable of performing the intended purposes, under the MPEP guidelines as set forth above, the theory of operation of the technologies of Nishimura will have been changed. Consequently, under the MPEP standards as set forth above there can be no teaching to modify/combine such references to meet the recitations of Independent Claim 1 as a matter of law. Accordingly, in light of the MPEP standards for patentability, Applicant respectfully requests that the Examiner hold Independent Claim 1 patentable and issue a Notice of Allowance of Applicant's Independent Claim 1 for at least the foregoing reasons.

**(C) SUGGESTED TEACHING APPEARS TO BE BASED ON INADVERTENT  
IMPERMISSIBLE HINDSIGHT; APPLICANT REQUESTS ISSUANCE OF A  
NOTICE OF ALLOWANCE**

As set forth above, under the MPEP standards, any teachings to modify or combine must be objectively verifiable. Specifically, under the relevant MPEP sections and legal standards, any conclusion that the art of record establishes a prima facie case of obviousness "*must be based on objective evidence of record.*"

Applicant has shown herein that there can be no teaching to modify/combine the technologies of Nishimura with the technologies of Stine as a matter of law for at least two reasons: the proposed modification renders the technologies of Nishimura unfit for their intended purposes, and/or the technologies of Nishimura would require substantial redesign/reconstruction/change in one or more principles of operation in order to meet the recitations of Independent Claim 1. Hence, the art of record contains no objectively verifiable teachings to modify/combine the technologies of Nishimura with the technologies of Stine, and indeed it cannot as a matter of law.

As set forth above, in the absence of objectively verifiable teachings to modify and/or combine the art of record to reach Applicant's claims at issue, no prima facie case of

unpatentability has been established. Accordingly, Applicant respectfully requests that Examiner hold Independent Claim 1 patentable over the art of record.

Insofar as that the art of record does not and cannot contain the alleged teachings to modify and/or combine the question arises as to where the Examiner stumbled upon such alleged teachings to modify and/or combine. Applicant respectfully points out that there is only one objectively verifiable place in the documentation of record wherein such teachings appear: Applicant's patent application.<sup>18</sup> Accordingly, insofar as that the only objectively verifiable teachings of record showing or suggesting the alleged teachings to modify and/or combine reside in Applicant's patent application, it follows that Examiner has used Applicant's patent application as a template by which to piece together the related art to reach Applicant's claims at issue. As set forth above, under the MPEP standards this is impermissible hindsight. Accordingly, Applicant respectfully requests that Examiner hold Claim 1 patentable over the art of record for at least this reason also.

In light of the above, Applicant respectfully submits that Independent Claim 1 is patentable over the art of record and respectfully requests that Examiner issue a Notice of Allowance of Claim 1.

#### **B. DEPENDENT CLAIMS 2-19**

Claims 2-19 depend either directly or indirectly from Independent Claim 1. "A claim in dependent form shall be construed to incorporate by reference all the limitations of the claim to which it refers." *See* 35 U.S.C. § 112 paragraph 4. Consequently, Dependent Claims 2-19 are not rendered obvious by the art of record for at least the reasons why Independent Claim 1 is not rendered obvious by the art of record. Accordingly, Applicant respectfully requests that Examiner hold Dependent Claims 2-19 patentable over the art of record for at least the foregoing reasons.

Notwithstanding the foregoing, Applicant respectfully asserts that the Examiner-cited art does not teach several of the recitations of the dependent claims as asserted by Examiner (e.g.,

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<sup>18</sup> Applicant points out that this is the SECOND time that Examiner has used applicant's application as an instruction manual of how to piece together the cited technical material.

the cited art does not teach, for example, the “switched-beam antenna system,” “horn antenna system,” “one or more electromagnetic reflectors of one or more shapes corresponding to one or more selected antenna patterns,” “adaptive-antenna system,” “micro-electro-mechanical system” recitations of Dependent Claims 4, 5, 6, 7, 16, respectively). However, in view of the fact that Applicant has established the patentability of herein-presented Independent Claim 1, Applicant is not expressly arguing such differences at this time; Applicant hereby expressly reserves the right to argue such dependent recitations in this or any other forum at any other time, and thus no waiver, factual and/or legal and/or otherwise should be inferred.

**V. ART OF RECORD DOES NOT ESTABLISH PRIMA FACIE CASE OF UNPATENTABILITY OF CLAIMS 20-23 AS PRESENTED HEREIN**

In the Office Action, Examiner stated “claims 1-4, 7, 17, and 19-30 stand rejected under 35 U.S.C. 103(a) as being unpatentable over Nishimura et al. (US Patent App. No. 2004/0005889) in view of Stine (US Patent App. No. 2003/0033394).” *See Examiner’s Office Action* page 2 (01 June 2006). Claims 5, 6, 8 -13, and 15-16 also stand rejected under 35 U.S.C. § 103(a). *Id.* pp. 5-8 (01 June 2006).

Applicant respectfully shows, below, that, on its face, the art of record does not show or suggest Applicant’s Claims 20-23. Accordingly, under the MPEP standards as set forth above, Applicant respectfully requests that Examiner allow such claims.

**A. INDEPENDENT CLAIM 20**

Applicant respectfully points out that Applicant's Independent Claim 20 recites as follows:

A mote method of using comprising:

distributing a mote, the mote having

(i) at least one of an antenna signal generation unit or an antenna signal detection unit, and

(ii) a directional antenna system operably couplable with said at least one of an antenna signal generation unit or an antenna signal detection unit.

**1. NO PRIMA FACIE OBVIOUSNESS OF INDEPENDENT CLAIM 20**

In the Office Action, with respect to Claim 20, Examiner stated "[r]egarding claim 20, method claim 20 is rejected for the same reason as system claim 1 [(e.g., as being unpatentable over Nishimura and Stine)] since the recited elements would perform the claimed steps." *Id* at p.3.

Examiner has stated that Independent Claim "20 is rejected for the same reason as system claim 1 since the recited elements would perform the claimed steps." *See Examiner's Office Action* page 3 (01 June 2006). Applicant respectfully points out that is has demonstrated above that no prima facie case of obviousness exists for Independent Claim 1. Accordingly, in light of Examiner's foregoing-referenced statement, no prima facie case of obviousness of Independent Claim 20 exists for like reason. Consequently, Applicant respectfully requests that Examiner issue a Notice of Allowance of Applicant's Independent Claim 20.

## **B. DEPENDENT CLAIMS 21-23**

Claims 21-23 depend either directly or indirectly from Independent Claim 20. “A claim in dependent form shall be construed to incorporate by reference all the limitations of the claim to which it refers.” *See* 35 U.S.C. § 112 paragraph 4. Consequently, Dependent Claims 21-23 are not rendered unpatentable by the art of record for at least the reasons why Independent Claim 20 is not rendered unpatentable by the art of record. Accordingly, Applicant respectfully requests that Examiner hold Dependent Claims 21-23 patentable over the art of record for at least the foregoing reasons.

## **VI. ART OF RECORD DOES NOT ESTABLISH PRIMA FACIE CASE OF UNPATENTABILITY OF CLAIMS 24-27 AS PRESENTED HEREIN**

In the Office Action, Examiner stated “claims 1-4, 7, 17, and 19-30 stand rejected under 35 U.S.C. 103(a) as being unpatentable over Nishimura et al. (US Patent App. No. 2004/0005889) in view of Stine (US Patent App. No. 2003/0033394).” *See Examiner’s Office Action* page 2 (01 June 2006). Claims 5, 6, 8 -13, and 15-16 also stand rejected under 35 U.S.C. § 103(a). *Id.* pp. 5-8 (01 June 2006).

Applicant respectfully shows, below, that, on its face, the art of record does not show or suggest Applicant’s Claims 24-27. Accordingly, under the MPEP standards as set forth above, Applicant respectfully requests that Examiner allow such claims.

### **A. INDEPENDENT CLAIM 24**

Applicant respectfully points out that Applicant’s herein-presented Independent Claim 24 recites as follows:

A mote method of making comprising:

forming a mote body; and

emplacing a directional antenna and an antenna steering unit proximate to the mote body.

## **1. NO PRIMA FACIE OBVIOUSNESS OF INDEPENDENT CLAIM 24**

In the Office Action, with respect to Claim 24, Examiner stated “[r]egarding claim 24, method claim 24 is rejected for the same reason as system claim 1 [(e.g., as being unpatentable over Nishimura and Stine)] since the recited elements would perform the claimed steps.” *Id* at p.4.

Examiner has stated that Independent Claim “24 is rejected for the same reason as system claim 1 since the recited elements would perform the claimed steps.” *See Examiner’s Office Action* page 4 (01 June 2006). Applicant respectfully points out that is has demonstrated above that no prima facie case of obviousness exists for Independent Claim 1. Consequently, in light of Examiner’s foregoing-referenced statement, no prima facie case of obviousness of Independent Claim 24 exists for like reason. Accordingly, Applicant respectfully requests that Examiner issue a Notice of Allowance of Applicant’s Independent Claim 24.

### **B. DEPENDENT CLAIMS 25-27**

Claims 25-27 depend either directly or indirectly from Independent Claim 24. “A claim in dependent form shall be construed to incorporate by reference all the limitations of the claim to which it refers.” *See* 35 U.S.C. § 112 paragraph 4. Consequently, Dependent Claims 25-27 are not rendered unpatentable by the art of record for at least the reasons why Independent Claim 24 is not rendered unpatentable by the art of record. Accordingly, Applicant respectfully requests that Examiner hold Dependent Claims 25-27 patentable over the art of record for at least the foregoing reasons.

Notwithstanding the foregoing, Applicant respectfully asserts that the Examiner-cited art does not teach several of the recitations of the dependent claims as asserted by Examiner (e.g., the cited art does not teach, for example, the “forming at least a part of the directional antenna from a substrate,” “affixing at least a part of the directional antenna to the mote body” recitations of Dependent Claims 26, 27, respectively). However, in view of the fact that Applicant has established the patentability of herein-presented Independent Claim 24, Applicant is not

expressly arguing such differences at this time; Applicant hereby expressly reserves the right to argue such dependent recitations in this or any other forum at any other time, and thus no waiver, factual and/or legal and/or otherwise should be inferred.

## **VII. ART OF RECORD DOES NOT ESTABLISH PRIMA FACIE CASE OF UNPATENTABILITY OF CLAIMS 28-30 AS PRESENTED HEREIN**

In the Office Action, Examiner stated “claims 1-4, 7, 17, and 19-30 stand rejected under 35 U.S.C. 103(a) as being unpatentable over Nishimura et al. (US Patent App. No. 2004/0005889) in view of Stine (US Patent App. No. 2003/0033394).” *See Examiner’s Office Action* page 2 (01 June 2006). Claims 5, 6, 8 -13, and 15-16 also stand rejected under 35 U.S.C. § 103(a). *Id.* pp. 5-8 (01 June 2006).

Applicant respectfully shows, below, that, on its face, the art of record does not show or suggest Applicant’s Claims 28-30. Accordingly, under the MPEP standards as set forth above, Applicant respectfully requests that Examiner allow such claims.

### **A. INDEPENDENT CLAIM 28**

Applicant’s herein-presented Independent Claim 28 recites as follows:

A mote method comprising:

integrating an antenna steering unit and a directional antenna proximate to a mote body with at least one of an animate or inanimate unit.

#### **1. NO PRIMA FACIE OBVIOUSNESS OF INDEPENDENT CLAIM 28**

In the Office Action, Examiner stated “[r]egarding claim 28, Nishimura et al. teaches integrating a directional antenna 6 (Fig. 3) proximate to a mote body 3 (Fig. 3) with at least one of an animate or inanimate unit (Sections 0070, 0074, and 0076).” *See Examiner’s Office Action* page 4 (01 June 2006) (emphasis added). Applicant respectfully points out that this statement by

Examiner is inconsistent with Examiner's statement that "Nishimura et al. fails to teach a directional antenna and antenna steering." *See Examiner's Office Action* p. 2 (01 June 2006).

Applicant respectfully points out that Examiner has stated that "Nishimura fails to teach a directional antenna." Insofar as that Independent Claim 28 recites "integrating an antenna steering unit and a directional antenna proximate to a mote body with at least one of an animate or inanimate unit" Applicant respectfully points out that, so far as Applicant can tell, at present there has been no identification within Nishimura et al. of the foregoing recitations of Applicant's herein-presented Independent Claim 28. Accordingly, under the MPEP standards as set forth above, no prima facie case exists that Nishimura et al. anticipates Claim 28. Should Examiner have intended to apply Examiner's rejection of Independent Claim 1 to Independent Claim 28, Applicant respectfully points out that such a rejection would also fail for the reasons why Examiner's rejection of Independent Claim 1 fails (as set forth elsewhere herein).

#### **B. DEPENDENT CLAIMS 29-30**

Claims 29-30 depend either directly or indirectly from Independent Claim 28. "A claim in dependent form shall be construed to incorporate by reference all the limitations of the claim to which it refers." *See* 35 U.S.C. § 112 paragraph 4. Consequently, Dependent Claims 29-30 are not rendered unpatentable by the art of record for at least the reasons why Independent Claim 28 is not rendered unpatentable by the art of record. Accordingly, Applicant respectfully requests that Examiner hold Dependent Claims 29-30 patentable over the art of record for at least the foregoing reasons.

Notwithstanding the foregoing, Applicant respectfully asserts that the Examiner-cited art does not teach several of the recitations of the dependent claims as asserted by Examiner (e.g., the cited art does not teach, for example, the "at least one of affixing the mote body to or encasing the mote body in an animate structural component" recitations of Dependent Claim 30). However, in view of the fact that Applicant has established the patentability of herein-presented Independent Claim 28, Applicant is not expressly arguing such differences at this time; Applicant hereby expressly reserves the right to argue such dependent recitations in this or any other forum at any other time, and thus no waiver, factual and/or legal and/or otherwise should be inferred.

**VIII. SUMMARY AND/OR CONCLUSION; NO WAIVER IS INTENDED, AND ALL LEGAL/FACTUAL RIGHTS AND/OR POSITIONS ARE RESERVED**

As explained herein, Applicant does not consider the art of record to render the pending claims unpatentable. Insofar as that the Applicant has herein argued the pending claims patentable, Applicant may not have herein explicitly addressed all the rejections and/or statements in Examiner's Office Action. The fact that the rejections and/or statements are not herein explicitly addressed should NOT be taken as an admission of any sort, and Applicant hereby reserves any and all rights to contest such rejections and/or statements at a later time. Specifically, no waiver (legal, factual, or otherwise), implicit or explicit, is hereby intended (e.g., with respect to any facts of which Examiner took Official Notice, and/or for which Examiner has supplied no objective showing, Applicant hereby contests those facts and requests express documentary proof of such facts at such time at which such facts may become relevant).

As shown above, the portions of the technical material cited by Examiner do not match the recitations of Applicant's herein-presented claims. Consequently, Applicant respectfully requests that Examiner issue a Notice of Allowance on all pending claims for at least the reasons set forth herein.

If the undersigned attorney has overlooked a relevant teaching in any of the references, the Examiner is requested to point out specifically where such teaching may be found. Furthermore, although not expressly set forth herein, Applicant continues to assert all points of any previous Office Action, and no waiver (legal, factual, or otherwise), implicit or explicit, is hereby intended.

The Examiner is encouraged to contact the undersigned by telephone at (425) 467-2260 to discuss the above and any other distinctions between the claims and the applied references, if desired. Also, if the Examiner notes any informalities in the claims, he is encouraged to contact the undersigned to expediently correct such informalities.

Respectfully submitted,



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[http://isf.intven.com/Shared Documents/Patents Filed-Active Drafts/Data Architecture-003/0104-003-006-Mote Networks Having Directional Antennas/OfficeActionResponse\\_2.doc](http://isf.intven.com/Shared Documents/Patents Filed-Active Drafts/Data Architecture-003/0104-003-006-Mote Networks Having Directional Antennas/OfficeActionResponse_2.doc)